

## ATTACHMENT IV

### Scope of Work for Corrective Measures Implementation

#### Purpose

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the Corrective Measures selected by U.S. EPA and other measures/additional work determined necessary by U.S. EPA pursuant to this Order such that the performance standards are achieved and maintained. U.S. Ceramic shall furnish all personnel, materials and services necessary for the implementation of the Corrective Measures.

#### Scope

The CMI program shall consist of the following components:

##### Section I: Corrective Measures Implementation Work Plan

- A. Program Management Plan
- B. Public Involvement Plan
- C. Health and Safety Plan
- D. Quality Assurance Project Plan (if necessary)
- E. Sampling and Analysis Plan (if necessary)
- F. Surveys (if necessary)

##### Section II: Corrective Measures Design

- A. Preliminary Design (if necessary)
- B. Prefinal and Final Designs
- C. Operation and Maintenance Plan (if necessary)
- D. Cost Estimate
- E. Project Schedule
- F. Construction Quality Assurance Objectives

### Section III: Corrective Measures Construction

- A. Responsibility and Authority
- B. Construction Quality Assurance Personnel Qualifications
- C. Inspection Activities
- D. Sampling Requirements
- E. Documentation

### Section IV: Other Reports and Submissions

- A. Progress
- B. Construction Completion Report
- C. Attainment of Groundwater Performance Standards Report (if necessary)
- D. Completion of Work Report (if necessary)
- E. Institutional Controls (if necessary)

### Section V: Proposed Schedule

## Section I: Corrective Measures Implementation (CMI) Work Plan

U.S. Ceramic shall prepare and submit a CMI Work Plan which includes the development and implementation of several plans, which shall be prepared concurrently. U.S. Ceramic shall submit a draft CMI Work Plan within 90 days of notification of U.S. EPA's selection of the Corrective Measures and submit a final CMI Work Plan within 45 days of receipt of U.S. EPA's comments on the draft CMI Work Plan. The CMI Work Plan includes the following:

### A. Program Management Plan

U.S. Ceramic shall prepare a Program Management Plan (PMP) which includes a discussion of the technical approach, engineering designs and plans, schedules, and personnel needed for performing the design, construction, operation, maintenance and monitoring of Corrective Measures for U.S. EPA review and approval. The PMP shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The PMP shall also include a description of qualifications of key personnel directing the Corrective Measure Design and Implementation, including contractor personnel.

### B. Public Involvement Plan

The existing Public Involvement Plan (PIP) shall be revised to describe the community relations program to be implemented by U.S. Ceramic during the design and construction subject to the approval of U.S. EPA. Specific activities which must be conducted include the revision of the PIP to reflect knowledge of community concerns and involvement during design and construction and the preparation of a fact sheet at the completion of the engineering design. At the request of U.S. EPA, U.S. Ceramic shall participate in the preparation of information disseminated to the public and in providing information for public meetings that may be held or sponsored by the U.S. EPA.

### C. Health and Safety Plan

U.S. Ceramic shall submit a Health and Safety Plan (HSP), which is not subject to U.S. EPA approval, that is designed to protect on-site personnel and area residents from physical, chemical and other hazards posed by the Corrective Measures, including pre-design studies.

### D. Quality Assurance Project Plan (if necessary)

U.S. Ceramic shall prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements, and sample analyses to be performed during the Corrective Measures, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid and properly documented. The QAPP shall be prepared in accordance with Attachment V. At the request of U.S. EPA, U.S. Ceramic shall participate in a pre-QAPP meeting with the U.S. EPA prior to preparation of any QAPP.

E. Sampling and Analysis Plan (if necessary)

U.S. Ceramic shall develop a Sampling and Analysis Plan (SAP) for the predesign field activities and any monitoring programs required by this Order. U.S. Ceramic shall submit the SAP addressing predesign field activities with the draft CMI Work Plan and shall propose a schedule for the submittal of any additional sampling plans. The SAP shall include, at a minimum:

1. A description of the proposed field activities;
2. The proposed locations of soil borings, ground water monitoring wells and surface water monitoring points;
3. A description of how the SAP is expected to meet the requirements of the final remedy;
4. A description of the planned operation and maintenance (O&M) activities, including the anticipated frequency of each O&M task;
5. A flow chart and schedule of work to be performed during the CMI.

F. Surveys (if necessary)

[Examples of surveys that might be necessary include: a land survey to delineate the extent of the area to be subject to deed restrictions.]

## Section II: Corrective Measures Design

U.S. Ceramic shall prepare final construction plans and specifications to implement the Corrective Measures at the facility which have been selected by U.S. EPA. The final product of the Corrective Measures Design shall be a technical package (or packages) that contain and address all elements necessary to accomplish the Corrective Measures. This includes all design support activities, initial permitting and access requirements, operation and maintenance, and institutional controls, as well as technical elements.

### A. Preliminary Design (if necessary)

U.S. Ceramic shall submit a Preliminary Design when the design effort is approximately 50% complete. The Preliminary Design submittal shall include or discuss, at a minimum, the following:

1. Design strategy and basis, including compliance with all applicable or relevant environmental and public health standards and minimization of environmental and public impacts;
2. Technical factors of importance, including use of currently accepted environmental control measures and technology, design constructability, and use of currently acceptable construction practices techniques;
3. A summary of activities performed and data generated during Corrective Measures Design or Predesign, including results and interpretations of data and studies;
4. Design assumptions and parameters, including design restrictions and process performance criteria;
5. Real estate, easement and permit requirements;
6. Preliminary construction schedule, including contracting strategy;
7. Discussion of the possible sources of error and references to possible operation and maintenance problems;
8. Detailed drawings of the proposed designs, including qualitative and quantitative flow sheets;
9. Tables listing equipment and specifications;

10. Tables giving material and energy balances; and

11. Sample calculations and derivation of equations essential to understanding the report.

#### B. Prefinal and Final Designs

U.S. Ceramic shall submit the Prefinal Design when the design effort is 95% complete and shall submit the Final Design when the design effort is 100% complete. The Prefinal Design shall fully address all U.S. EPA comments on the Preliminary Design. After receipt of U.S. EPA comments on the Prefinal Design, U.S. Ceramic shall execute the required revisions and submit the Final Design with reproducible drawings and specifications suitable for bid advertisement. The Final Design consists of the Final Design Plans and Specifications (100% complete), Final Construction Cost Estimate, Final Operation and Maintenance Plan, Construction Quality Assurance Objectives, Final Project Schedule and Final Health and Safety Plan specifications.

The U.S. EPA may require additional work, including but not limited to studies, to supplement the available technical data. U.S. Ceramic shall furnish all equipment and personnel necessary to complete any additional work needed. Draft and final reports shall be prepared and present all data obtained during the additional studies, a summary of the results, and conclusions.

#### C. Operation and Maintenance Plan (if necessary)

U.S. Ceramic shall prepare an Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the Corrective Measures. A draft O&M Plan shall be submitted concurrently with the Prefinal Design and the final O&M Plan with the Final Design. The plan shall include the following elements:

##### 1. Description of normal O&M:

a. Description of tasks for operation;

b. Description of tasks for maintenance;

c. Description of prescribed treatment or operation conditions; and

d. Schedule showing frequency of each O&M task.

2. Description of potential operating problems:

- a. Description and analysis of potential operation problems;
- b. Sources of information regarding problems; and
- c. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing:

- a. Description of monitoring tasks;
- b. Description of required laboratory tasks and their interpretation;
- c. Required data collection, Quality Assurance Project Plan (QAPP);
- d. Schedule of monitoring frequency; and
- e. Description of triggering mechanisms for ground water/surface water monitoring results.

4. Description of alternate O&M:

- a. Should system fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed cleanup standards; and
- b. Analysis of vulnerability and additional resource requirements should a failure occur.

5. Corrective steps:

- a. Description of corrective steps to be implemented in the event that cleanup or performance standards are not met; and
- b. Schedule for implementing these corrective steps.

6. Safety plan:

- a. Description of precautions, of necessary equipment, etc., for site personnel; and

b. Safety tasks required in event of systems failure.

7. Description of equipment:

- a. Equipment identification;
- b. Installation of monitoring components;
- c. Maintenance of site equipment; and
- d. Replacement schedule for equipment and installed components.

8. Records and reporting mechanisms required:

- a. Daily operating logs;
- b. Laboratory records;
- c. Records for operating costs;
- d. Mechanism for reporting emergencies;
- e. Personnel and maintenance records; and
- f. Monthly/annual reports to State agencies.

D. Cost Estimate

U.S. Ceramic shall refine the cost estimate developed in the CMS to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and O&M costs. An Initial Cost Estimate shall be submitted simultaneously with the Prefinal Design and the Final Cost Estimate with the Final Design.

E. Project Schedule

U.S. Ceramic shall develop a project schedule for construction and implementation of the Corrective Measures which identifies timing for initiation and completion of all critical path tasks. U.S. Ceramic shall specifically identify dates for completion of the project and major interim milestones. An initial project schedule shall be submitted simultaneously with the Prefinal Design and a final project schedule with the Final Design.



#### F. Construction Quality Assurance Objectives

U.S. Ceramic shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements and documentation. Draft Construction Quality Assurance Objectives shall be submitted simultaneously with the Prefinal Design and the Final Construction Quality Assurance Plan shall be submitted following U.S. EPA approval of the Final Design.

### Section III: Corrective Measures Construction

U.S. Ceramic shall finalize the Construction Quality Assurance Plan incorporating comments received on the draft Construction Quality Assurance Plan submitted with the Prefinal Design. Within 45 days of U.S. EPA approval of the Final Design, U.S. Ceramic shall implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that a completed Corrective Measure will meet or exceed all design criteria, plans and specifications. The CQA Plan is a facility specific document which must be approved by U.S. EPA prior to the start of the construction. At a minimum, the CQA plan should include the elements which are summarized below. Upon U.S. EPA approval of the CQA Plan, U.S. Ceramic shall construct and implement the Corrective Measures in accordance with the approved design, schedule and CQA plan. U.S. Ceramic shall also implement the elements of the approved O&M plan.

#### A. Responsibility and Authority

U.S. Ceramic shall describe fully in the CQA Plan the responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measures. U.S. Ceramic shall also identify a CQA officer and the necessary supporting inspection staff.

#### B. Construction Quality Assurance Personnel Qualifications

U.S. Ceramic shall set forth the qualifications of the CQA Officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

#### C. Inspection Activities

U.S. Ceramic shall summarize in the CQA plan the observations and tests that will be used to monitor the construction and/or installation of the components of the Corrective Measures. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection shall also ensure compliance with all health and safety procedures. In addition to the oversight inspections, U.S. Ceramic shall conduct construction inspections.

Within 30 days after U.S. Ceramic makes a preliminary determination that construction is complete, U.S. Ceramic shall notify U.S. EPA for the purposes of conducting an inspection. The inspection shall consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA-approved Corrective Measures. Any outstanding construction items discovered during the inspection shall be identified and noted. Additionally, treatment equipment, if installed, shall be operationally tested by U.S. Ceramic. U.S. Ceramic shall certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. U.S. Ceramic shall outline in the inspection report the outstanding construction items, actions required to resolve items, completion date for these items and date for final inspection.

Upon completion of any outstanding construction items, U.S. Ceramic shall notify U.S. EPA for the purposes of conducting a final inspection. The final inspection shall consist of a walk-through inspection of the project site. Confirmation shall be made that outstanding items have been resolved.

#### D. Sampling Requirements

U.S. Ceramic shall present in the CQA plan the sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection and plans for correcting problems as addressed in the project specifications.

#### E. Documentation

U.S. Ceramic shall describe in detail in the CQA plan the reporting requirements for CQA activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports and final documentation. Provisions for the final storage of all records shall be presented in the CQA Plan.

#### Section IV: Other Reports and Submissions

U.S. Ceramic shall prepare plans, specifications and reports as set forth in Sections I through III to document the design, construction, operation, maintenance and monitoring of the Corrective Measure. Other documentation shall include, but not be limited to the following:

##### A. Progress

U.S. Ceramic shall at a minimum provide the U.S. EPA with signed monthly progress reports during the design and construction phases and semi-annual progress reports for operation and maintenance activities containing:

1. A description and estimate of the percentage of the CMI completed;
2. Summaries of all findings;
3. Summaries of all changes made in the CMI during the reporting period;
4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

##### B. Construction Completion Report

Within 30 days of a successful final inspection, U.S. Ceramic shall submit a Construction Completion Report. In the report, a registered professional engineer and U.S. Ceramics Project Coordinator shall state that the Corrective Measures have been constructed in accordance with the design and specifications, to the best of their knowledge, and the performance standards have been attained. The written report shall include as-built

drawings signed and stamped by a registered professional engineer. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order. The Final O&M Plan shall be submitted concurrently with the Construction Completion Report.

C. Attainment of Ground Water Performance Standards Report (if necessary)

Within 45 days after U.S. Ceramic concludes that the ground water performance standards have been attained, U.S. Ceramic shall submit a written report and certification. In the report, a registered professional engineer and U.S. Ceramics Project Coordinator shall state that the ground water performance standards have been attained in full satisfaction of the requirements of this Order. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order.

D. Completion of Work Report (if necessary)

This report shall be submitted by U.S. Ceramic when construction is complete, performance standards have been attained and O&M is complete. Within 45 days after U.S. Ceramic concludes that all phases of the work (including O&M and monitoring) have been completed, U.S. Ceramic shall schedule and conduct a precertification inspection to be attended by representatives of U.S. Ceramic and U.S. EPA. If, after the precertification inspection and any prefinal or subsequent final inspections required by U.S. EPA, U.S. Ceramic still concludes that the work has been fully performed, U.S. Ceramic shall submit within 30 days of a successful final inspection, a written Completion of Work Report to U.S. EPA for approval. In the report, a registered professional engineer and U.S. Ceramics Project Coordinator shall state that the Corrective Measures have been completed in full satisfaction of the requirements of this Order. The written report shall include as-built drawings stamped by a registered professional engineer. The report shall be certified by a Responsible Official pursuant to Section XIV of the Order.

E. Institutional Controls (if necessary)

U.S. Ceramic shall implement the deed notification/restrictions contained in the form set forth in U.S. EPA's decision on corrective measure(s).

## Section V: Proposed Schedule

U.S. Ceramic will provide the U.S. EPA with the CMI submittals according to the following schedule:

Facility Submission	Due Date
Draft CMI Workplan (Section I)	90 days after notification of U.S. EPA's selection of Corrective Measures
Final CMI Workplan (Section I)	45 days after receipt of comments on the Draft CMI Workplan
Preliminary Design (if necessary) (Section II)	In accordance with the project schedule approved in the CMI Workplan
Prefinal Design (including Draft O&M and CQA Plans, if necessary) (Section II)	In accordance with the project schedule approved in the CMI Workplan
Final Design (including Final O&M Plan, if necessary) (Section II)	45 days after receipt of comments on the Prefinal Design

Facility Submission	Due Date
Final CQA Plan (Section III)	Within 45 days of approval of the Final Design
Initiate Construction of Corrective Measures Design (Section III)	Immediately upon approval of the CQAP
Initial Construction Inspection (Section III)	30 days after Construction Completion
Construction Completion Report (Section IV)	30 days after final Construction Inspection
O&M Progress Reports (Section IV)	No later than 6 months after approval of the Construction Completion Report and semi- annually thereafter
Attainment of GW Performance Standards Report (if necessary) (Section IV)	45 days after determination that GW performance standards have been attained
Completion of Work Inspection (if necessary) (Section IV)	45 days after completion of all work, including O&M
Completion of Work Report (if necessary) (Section IV)	30 days after final Completion of Work Inspection
Progress Reports on Sections I through IV	Monthly